

CLAIMS

What is claimed is:

1 1. A disk drive enclosure for housing a plurality of disk drives, the enclosure being arranged
2 to provide enclosure services to the plurality of disk drives, the enclosure comprising:
3 an enclosure services processor;
4 at least one disk drive arrangement including a disk drive and a serial adapter coupled
5 non-serially thereto;
6 a serial data bus coupled between the enclosure services processor and the at least one
7 serial adapter;
8 characterized in that the at least one serial adapter is arranged for communicating serially
9 with the enclosure services processor and non-serially with the at least one respective disk drive,
10 such that enclosure services data may be exchanged therebetween.

1 2. The enclosure of claim 1 characterized in that the disk drive has an address connection
2 for selectively coupling to one of addressing means and the adapter and wherein the adapter
3 includes data switching means and serial conversion means, the data switching means being
4 arranged to selectively switch the address connection between the addressing means and the
5 serial conversion means.

1 3. The enclosure of claim 2 characterized in that the serial data bus is arranged to operate
2 with an I2C serial protocol.

1 4. The enclosure of claim 3 characterized in that the adapter is a discrete element interposed
2 between the disk drive and the enclosure.

1 5. The enclosure of claim 4 characterized in that the serial data bus is a three line serial data
2 bus.

1 6. The enclosure of claim 4 characterized in that the serial data bus comprises a two line
2 serial data bus and a discrete interrupt connection between the adapter and the enclosure services
3 processor.

1 7. The enclosure of claim 3 characterized in that the adapter is integrated with interfacing
2 circuitry of the enclosure.

1 8. The enclosure of claim 7 characterized in that the serial data bus is a three line serial data
2 bus.

1 9. The enclosure of claim 7 characterized in that the serial data bus comprises a two line
2 serial data bus and a discrete interrupt connection between the adapter and the enclosure services
3 processor.

1 10. A disk drive arrangement for use in a disk drive enclosure having a number of disk drives
2 and being arranged to provide enclosure services via an enclosure services processor, the
3 arrangement comprising:

4 a disk drive; and,

1 a serial adapter coupled non-serially to the disk drive and arranged for coupling via a
2 serial data bus of the enclosure to the enclosure services processor; characterized in that the
3 serial adapter is arranged for communicating serially with the enclosure services processor and
4 non-serially with the disk drive, such that enclosure services data may be exchanged
5 therebetween.

1 11. The arrangement of claim 10 characterized in that the disk drive has an address
2 connection for selectively coupling to one of addressing means and the adapter and wherein the
3 adapter includes data switching means and serial conversion means, the data switching means
4 being arranged to selectively switch the address connection between the addressing means and
5 the serial conversion means.

- 1 12. The arrangement of claim 11 characterized in that the serial data bus is arranged to
2 operate with an I2C serial protocol.
- 1 13. The arrangement of claim 12 characterized in that the adapter is a discrete element
2 interposed between the disk drive and the enclosure.
- 1 14. The arrangement of claim 13 characterized in that the serial data bus is a three line serial
2 data bus.
- 1 15. The arrangement of claim 13 characterized in that the serial data bus comprises a two line
2 serial data bus and a discrete interrupt connection between the adapter and the enclosure services
3 processor.
- 1 16. The arrangement of claim 12 characterized in that the adapter is integrated with
2 interfacing circuitry of the enclosure.
- 1 17. The arrangement of claim 16 characterized in that the serial data bus is a three line serial
2 data bus.
- 1 18. The arrangement of claim 16 characterized in that the serial data bus comprises a two line
2 serial data bus and a discrete interrupt connection between the adapter and the enclosure services
3 processor.
- 1 19. An adapter for coupling between a disk drive and an enclosure, the enclosure having a
2 number of disk drives and being arranged to provide enclosure services via an enclosure services
3 processor, the adapter comprising:
4 means for coupling non-serially to the disk drive;
5 means for coupling via a serial data bus of the enclosure to the enclosure services
6 processor;

7 characterized in that the adapter is arranged for communicating serially with the
8 enclosure services processor and non-serially with the disk drive, such that enclosure services
9 data may be exchanged therebetween.

1 20. The adapter of claim 19 characterized in that the disk drive has an address connection for
2 selectively coupling to one of addressing means and the adapter and
1 wherein the adapter includes data switching means and serial conversion means, the data
2 switching means being arranged to selectively switch the address connection between the
3 addressing means and the serial conversion means.

1 21. The enclosure of claim 20 characterized in that the serial data bus is arranged to operate
2 with an I2C serial protocol.

1 22. The enclosure of claim 21 characterized in that the adapter is a discrete element
2 interposed between the disk drive and the enclosure.

1 23. The enclosure of claim 22 characterized in that the serial data bus is a three line serial
2 data bus.

1 24. The enclosure of claim 22 characterized in that the serial data bus comprises a two line
2 serial data bus and a discrete interrupt connection between the adapter and the enclosure services
3 processor.

1 25. The enclosure of claim 21 characterized in that the adapter is integrated with interfacing
2 circuitry of the enclosure.

1 26. The enclosure of claim 25 characterized in that the serial data bus is a three line serial
2 data bus.

1 27. The enclosure of claim 25 characterized in that the serial data bus comprises a two line
2 serial data bus and a discrete interrupt connection between the adapter and the enclosure services
3 processor.

1 28. A method for providing enclosure services to a disk drive enclosure having at least one
2 disk drive, the method comprising the steps of:

3 initiating a request for enclosure services from the at least one disk drive, transmitting
4 the request to a serial adapter coupled non-serially to the disk drive;

5 translating the request into serial data via serial conversion means of the serial adapter;

6 transmitting the serial data from the serial adapter to an enclosure services processor of
7 the enclosure via a serial data bus coupled therebetween;

8 transmitting serial enclosure services data from the enclosure services processor to the
9 serial adapter via the serial data bus in response to the request;

10 translating the serial enclosure services data into non-serial enclosure services data via
11 the serial conversion means;

12 receiving the non-serial enclosure services data at the disk drive.

1 29. The method of claim 28 characterized in that the serial data bus is arranged to operate
2 with an I2C serial protocol.

1 30. A disk drive enclosure for housing a plurality of disk drives, the enclosure comprising:

2 an enclosure services processor;

3 a serial data bus coupled between the enclosure services processor and a
4 serializer/deserializer; and

5 a multiplexer coupled to the serializer/deserializer, a disk drive and a non-serial
6 backplane interface, wherein the multiplexer selectively outputs parallel data from the disk drive
7 to either the serializer/deserializer or the non-serial backplane interface, such that communication
8 with the disk drive is selectively serial or non-serial.

- 1 31. The disk drive enclosure of claim 30, wherein the non-serial communication is with
- 2 another disk drive in the disk drive enclosure via the non-serial backplane interface, and the
- 3 serial communication is with another disk drive in the disk drive enclosure via the serial data bus
- 4 whose data traffic is under the control of the enclosure services processor.